

Work Order ID 69970

Wednesday, May 25, 2011 9:07:20 AM



Page 1

Item ID: D206-667-207BL

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Mid Aft

Start Date: 5/25/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 6/30/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date: 11-05-25

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
IIN-D206-667	D

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-207

★ CHG 62
SEE ATTACHED

CL 11-7-14

110

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-247 using CNC bender program D206-667-207

11-7-14

120

QC15- Crosstube Dimensional Check

0.00



QC

Memo

0.00

Quality Control

8/17/15



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Crosstubes	0.00							
	Crosstubes								
Crosstubes	Memo	0.00							
	1-Drill pilot holes in tube using drill Jig DT 8583 & DT 8584 and drill table DT8577 and tower holes #6 as per QSI0010 and as per Dwg D206-667-247. Drill all (3) top holes.								
	2-Drill and Ream all holes in tube to finish size using drill Jig DT 8583 & DT 8584 as per Dwg D206-667-247 Check dimensions between holes on all four sides.								
	3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.								
	4-Drill pilot holes using drill Jig DT 8584 & DT 8583 as per Dwg D206-667-247. Drill only the top (2) holes.								
	5-Drill & ream the top (2) holes to finish size using drill Jig DT 8583 & DT 8584 as per Dwg D206-667-247								
	6-Drill Fwd rivet holes using drill Jig DT 8787 as per Dwg D206-667-147. Note: Fwd side has 3x top holes.								
	7-Drill Aft rivet holes using drill Jig DT 8787 as per Dwg D206-667-247.								
	8-C'sink holes as per Dwg D206-667-247.								
	9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-247 Inside of Cuff (Do not engrave on outside of tube)								
	10-Deburr & Inspect for surface damage. Repair damage within limits as per								

SAD
11-07-05TW 11-07-06
SAD

W/O:		WORK ORDER CHANGES					
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	Dwg D206-667-247								
140 HandFXtube	Crosstubes Chemical Conversion	0.00							
	Memo	0.00							
	Hand Finishing Crosstubes								
150 QC	QC3- Inspect Part Finish.	0.00							
	Memo	0.00							
	Quality Control								
160 QC	QC5- Inspect part completeness to step on W/O	0.00							
	Memo	0.00							
	Quality Control								

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Outsource process - NDT per QSI038 4.1	0.00							
	Outsource2	0.00							
	Outsource process - NDT								
	Memo	0.00							
	Liquid Penetrant Inspection as per QSI 038Or								
	Issue P/O: 14448								
	LPI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
180	Packaging	0.00							
	Packaging	0.00							
	Packaging								
	Memo	0.00							
	Ensure copy of NDT results attached to work order.								
190	QC5- Inspect part completeness to step on W/O	0.00							
	QC	0.00							
	Quality Control								
	Memo	0.00							
	Ensure results are as per Dwg D206-667-247								

CL 11/07/11 (1)

P44/7/11 (1)

11 07 11 (1)

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Cust Item ID:

Required Date: 6/30/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	SprayPaint	0.00							
	SprayPaint	0.00							
Spray Painting	<div><div><div>Memo</div><div>1-Prime inside and outside crosstube as per QSI 005 4.2</div><div>2-Paint outside crosstube with White Imron as per QSI 005 4.2</div><div>PRIME:</div><div>Start Time: _____</div><div>Finish Time: _____</div><div>PAINT:</div><div>Start Time: _____</div><div>Finish Time: _____</div></div><div><div>Prime: 117319</div><div>Paint: 115985</div><div>Clean: 117113</div></div></div>								
210	QC14- Inspect Spray Paint	0.00							
	QC	0.00							
Quality Control	Wrap in plastic bag to protect from scratches								

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Cust Item ID:

Required Date: 6/30/2011 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

220

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Install nut plates as per Dwg D206-667-247.

RT 11-07-13

230

0.00



Skidtubes

Crosstubes

Memo

0.00

Crosstubes

1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (3) top holes should be facing up.

A/R Magnobond 6398: 118234

pro sen

2-Install supports and clamps as per Dwg D206-667-247. Torque clamps to 80-100 in lb

★ USE PRUSEAL
SEE ATTACHED

RTO

W/O:		WORK ORDER CHANGES					
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W/O: 69970		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
11.07.06	230	BOND SUPPORTS USING PROSEAL PER ATTACHED PROCEDURE (EMAIL) NSW CHG 602	See See 230		1	11.07.06 05/042	S 11/07/15

Part No: D206-667-207BL PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

Chris Provencal

From: David Shepherd <dshepherd@dartaero.com>
Sent: Wednesday, June 15, 2011 3:05 PM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'; 'Linda Lacelle'
Subject: RE: Procedure for installing supports.

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Chris,

I agree with your procedure outlined below. It is our preference to leave the paint on the crosstube if we can for added corrosion protection (and for ease of manufacture). If Dan's final testing shows there is a big difference between a painted/unpainted crosstube, then we will switch to alodine only on the crosstube.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Wednesday, June 15, 2011 11:24 AM
To: 'David Shepherd'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'
Subject: RE: Procedure for installing supports.

David,

Can I confirm that this is the agreed procedure for all newly manufactured tubes with off-center supports:

- Scuff paint ^{on x tube} under support, clean with MEK
- Completely remove any finish on support (if present), scuff bottom surface of support, clean with MEK
- Apply a 0.04" – 0.07" layer of Proseal 890 class B-2 on bottom of support and install wet.
- Install clamps and torque per dwg
- Clean up excess proseal
- Let cure for 72 hours after installation, recheck torque.

Chris

From: David Shepherd [mailto:dshepherd@dartaero.com]
Sent: Tuesday, June 14, 2011 10:59 AM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'
Subject: RE: Procedure for installing supports.

Made a couple of small changes.

- Remove finish on x tube in area of support down to alodine finish.
- Touch up alodine on x tube in affected area
- Completely remove any finish on support, scuff bottom surface of support
- Apply a 0.04" – 0.07" layer of Proseal 890 class B-2 on bottom of support and install wet.
- Install clamps and torque per dwg

Work Order ID 69970

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Reference:

Cust Item ID:







Customer:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240  QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00					11	07	14 (1)
250  Packaging Packaging	Pick Kit Memo	0.00 0.00							
260  QC Quality Control	QC4- 100% Inspect kits for completeness Memo	0.00 0.00							

W/O:		WORK ORDER CHANGES					
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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00							
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D206-667-207 Location: PPP Rev: <i>Draft</i>								
280	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00							
Quality Control									

UNF 11-07-14

W/O:		WORK ORDER CHANGES					
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Picklist Print

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Work Order ID: 69970

Parent Item: D206-667-207BL

Parent Item Name: Crosstube Mid Aft



Start Date: 5/25/2011

Required Date: 6/30/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: RevA 11.01.13 New Issue EC verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN5-10A Bolt		Purchased	No				Each	304.0000		10			
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				ST337				304					
					117313			179					
					117795			125					
AN5-32A Bolt		Purchased	No				Each	176.0000					
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				ST340				176					
					115589			51					
					117161			50					
					117514			50					
					117688			25					
AN5-34A Bolt		Purchased	No				Each	130.0000					
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				ST340				130					
					116704			20					
					117010			20					
					117366			20					
					117794			70					
AN960JD516 Washer	NAS1149D0563J	Purchased	No				Each	0.0000		18			

4

11/18/13

4

4

4

11/18/206 11/7/248

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Parent Item Name: Crosstube Mid Aft

Start Date: 5/25/2011

Required Date: 6/30/2011

Start Qty: 1.00

Required Qty: 1.00

D206-667-247TRN Manufactured No



B69978

Each 0.0000



① DP 11-7-4

Crosstube Assembly, Mid Aft

D2873-043 Manufactured No



Each 40.0000



2 RT 11-07-13

Nut Plate Assembly

Location	Loc Qty	Loc Code
LG	36	
68084	16	
68801	20	
LG052	4	
66898	4	

x2

D2873-045 Manufactured No



71307

Each 35.0000



2 RT 11-07-13

Nut Plate Assembly

Location	Loc Qty	Loc Code
LG	20	
68800	20	
LG052	15	
65992	5	
67741	10	

D2892-1 Manufactured No



70735

Each 18.0000



2 RT 11-07-13

Support

Location	Loc Qty	Loc Code
LG052	18	
42785	14	
62592	2	
65717	2	

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Parent Item Name: Crosstube Mid Aft

Start Date: 5/25/2011

Required Date: 6/30/2011

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured No

Each

61.5400

4



RUBBER CUSHION

70113



BT 11-07-13

Location

Loc Qty

Loc Code

LG

52

67353

7

68893

45

LG055

9.54

68157

9.54

MS20601-AD4W10

Purchased No

Each

200.0000

14



RIVET



BT 11-07-13

Location

Loc Qty

Loc Code

LG051

200

116186

3

116767

14

117193

83

117676

100

MS21042L5

Purchased No

Each

1,243.000

4



Nut



x14
11/7/11 SD

Location

Loc Qty

Loc Code

ST300

1243

116105

283

116548

260

117441

500

117591

100

117611

100

4

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Shop Packet Print

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Parent Item Name: Crosstube Mid Aft

Start Date: 5/25/2011

Required Date: 6/30/2011

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

Purchased

No

Each

95.0000

4



BT 11-07-13

Clamp(per MIL-DTL-8783C)

Location

Loc Qty

Loc Code

LG050

95

116207

7

117279

38

117506

50

X4

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Shop Packet Print

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Dart Aerospace Ltd

NOTE:

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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

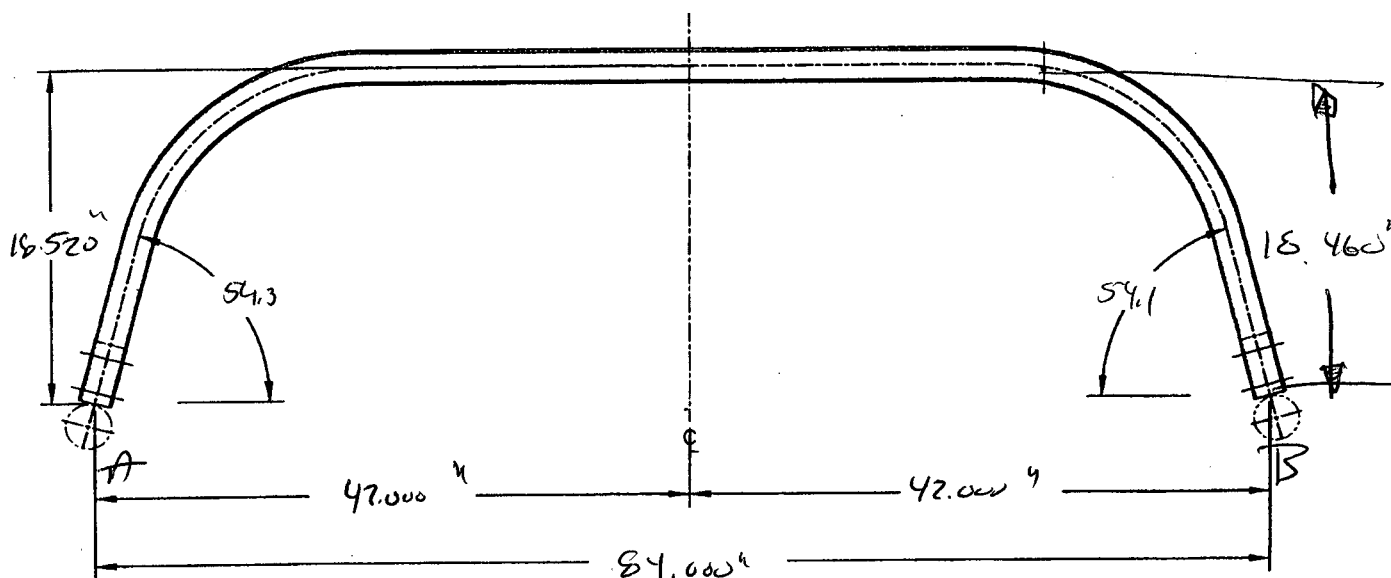
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DART AEROSPACE LTD		Work Order:	
Description:		Part Number:	
Inspection Dwg:	Rev:	Page 1 of 1	

Required Dimension	Min	Max
Height 18.47	18.340	18.600
1/2 Span 41.82	41.750	42.050
Angle 54	54°	56
Total Span 83.64	83.500	84.100



Comments

QC15 Inspection	8
Date	11/07/05

Rev	Date	Change	Revised by	Approved
A		New Issue		
B	06.09.19	Reformat; QC level revised	KJ/JM	
C	07.02.06	Reformat	KJ/JM	

Item	Qty -247	Part Number	Description
1	X	D206-667-247	CROSSTUBE ASSEMBLY (206L MID AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6004-115
FINISHED LENGTH = 99.76±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-247" AND BATCH NUMBER ON
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 21.1 lbs (-607 = 17.7 lbs)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE
D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE
LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 69970
2011-05-25

RELEASED
2011-05-25
WJ

A	NEW ISSUE	DESCRIPTION	CP	10.12.23
REV.			BY	DATE
DESIGN	<i>WJ</i>			
DRAWN	<i>WJ</i>			
CHECKED	<i>WJ</i>			
MFG. APPR.	<i>WJ</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	REV. A	
APPROVED	<i>WJ</i>	DRAWING NO. D206-667-247	SHEET 1 OF 4	
DE APPR.	<i>WJ</i>	TITLE CROSSTUBE ASS'Y (206L MID AFT)	SCALE	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR FOR ANY COMMERCIAL PURPOSE WITHOUT THE WRITTEN PERMISSION FROM DART AEROSPACE LTD.		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

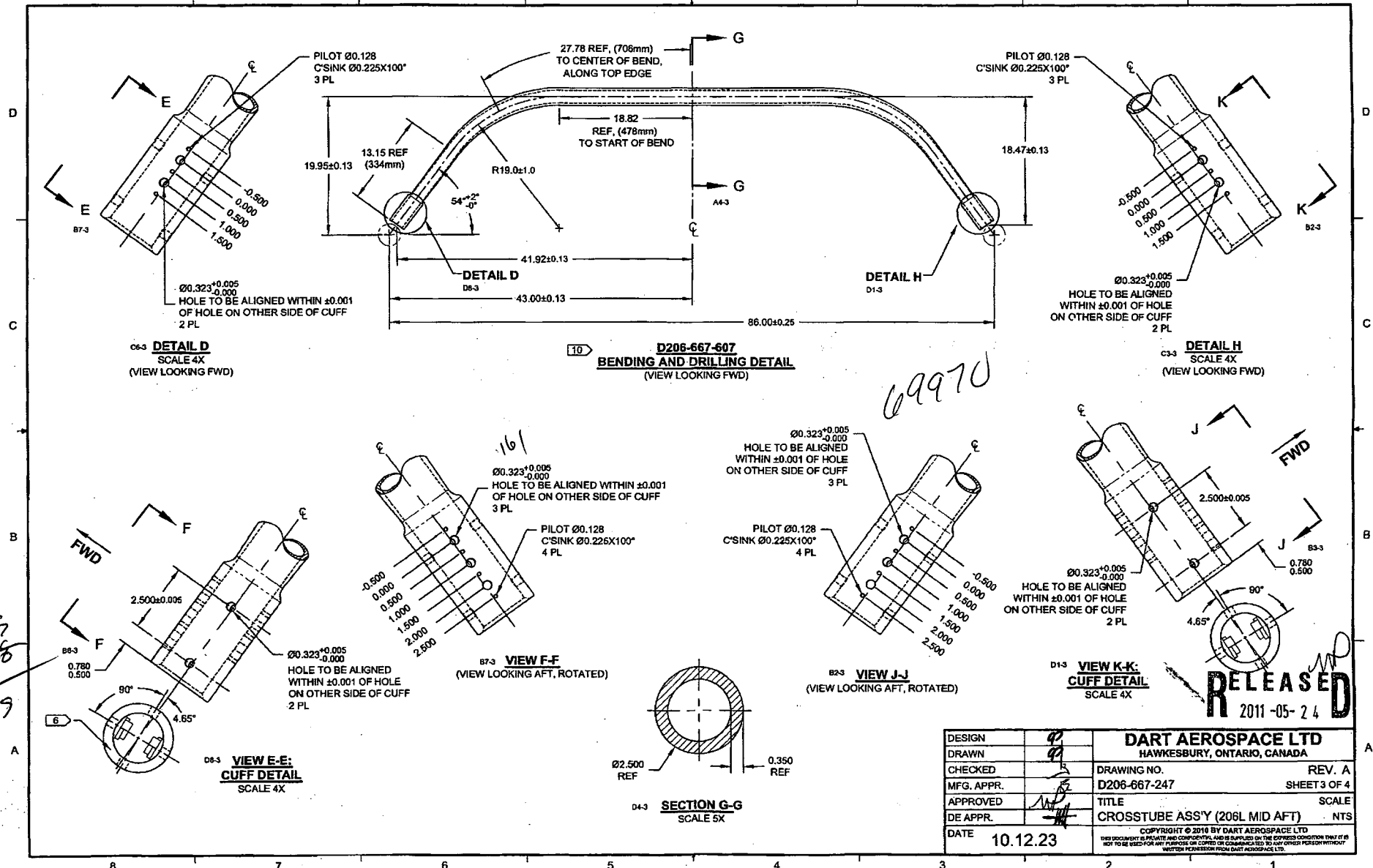
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

8 7 6 5 4 3 2 1



DESIGN	<i>JS</i>	DART AEROSPACE LTD	
DRAWN	<i>JS</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.	<i>JS</i>	D206-667-247	SHEET 3 OF 4
APPROVED	<i>JS</i>	TITLE	SCALE
DE APPR.	<i>JS</i>	CROSSTUBE ASS'Y (206L MID AFT)	NTS
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RELEASED
2011-05-24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

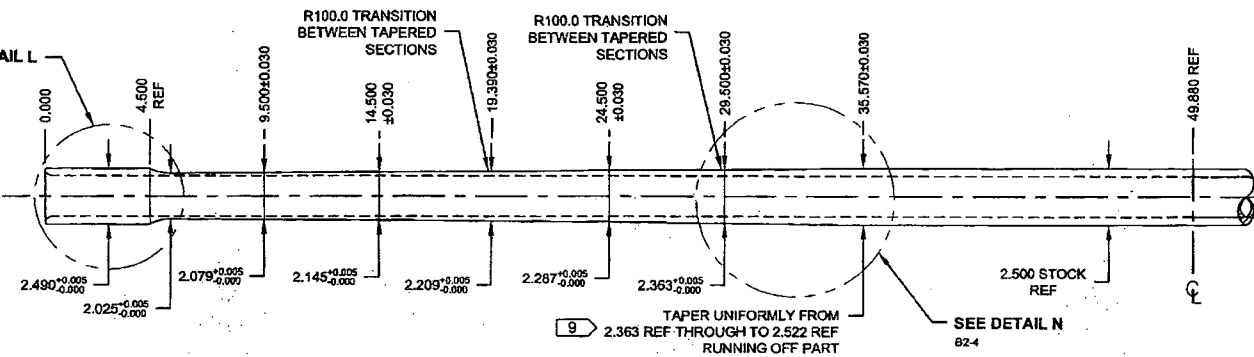
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

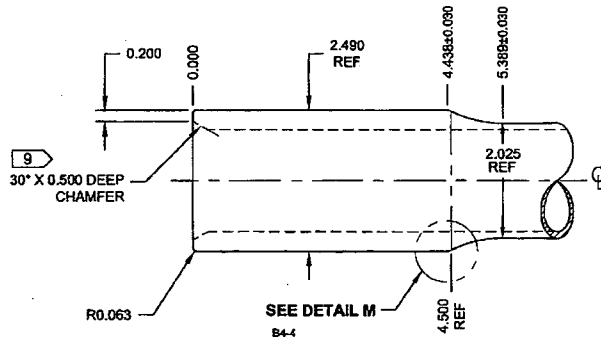
NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

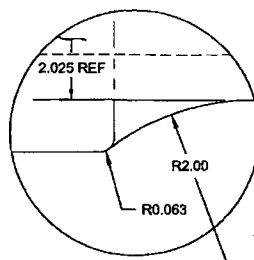
SEE DETAIL L
B7-4



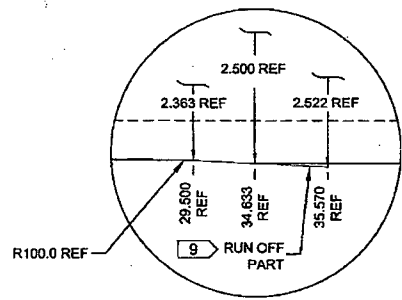
TURNING DETAIL



DETAIL L: CROSSTUBE CUFF
SCALE 2.5X



DETAIL M: CUFF TRANSITION
NOT TO SCALE



DETAIL N: TAPER RUN-OFF
NOT TO SCALE

RELEASED
2011-05-24

DESIGN	99	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	99		
CHECKED	99	DRAWING NO. D206-667-247	REV. A
MFG. APPR.	99	SHEET 4 OF 4	
APPROVED	99	TITLE	SCALE
DE APPR.	99	CROSSTUBE ASS'Y (206L MID AFT)	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 05622

PAGE 1 OF 1

CLIENT

ATTENTION

ADDRESS

PROJECT

ITEM(S) EXAMINED

DATE

ACUREN JOB NO.

PO/WO NO.

WORK LOCATION

ACCEPTANCE STD.

TIME

AM

PM

REV./DATE

JOB DESCRIPTION

PROCEDURE No. LT-000

REV./DATE 2008

TECHNIQUE No. LT-000

REV./DATE 2008

ART NO.

MATERIAL

THICKNESS

SCOPE

TEST DETAILS

METHOD

☒ FLUORESCENT☐ VISIBLE☒ WATER WASH☐ SOLVENT REMOVABLE☐ POST EMULSIFIED

FAMILY BRAND

ENETRANT

MINIMUM DWELL TIME

10

MIN.

ENETRANT REMOVER

MINIMUM DRY TIME

>10

MIN.

DEVELOPER

MINIMUM DWELL TIME

10

MIN.

DEVELOPER TYPE

☒ NON AQUEOUS☐ AQUEOUS☐ DRY

BLACK LIGHT S/N 13798

☐ OUTPUT > 1000 μ W/cm²☒ AMBIENT < 2 fc

LIGHTING EQUIP.

☐ FLASHLIGHT☐ TROUBLELIGHT☐ OUTPUT > 100 fc @ SURFACE

OTHER

LIGHT METER S/N

CAL DUE DATE

TEST SURFACE

SURFACE CONDITION

☐ AS GROUND☐ AS WELDED☐ MACHINED☐ SHOT BLASTED☒ CLEAN BARE METAL

SURFACE TEMPERATURE

☐ < -4°C/ 20°F☐ -4°C/ 20°F TO 10°C/ 50°F☒ 10°C/ 50°F TO 52°C/ 125°F☐ > 52°C/ 125°F

RESULTS-

☐ METRIC☐ IMPERIAL

1	STUDS (4)	W.O. ID 69625	✓
2	CROSSSTUBE	W.O. ID 2006-667-207 BL	✓
3	CROSSSTUBE	W.O. ID 69970	✓
4	"	W.O. ID 69965	✓
5	"	W.O. ID 71044	✓
6	"	W.O. ID 71045	✓
7	"	W.O. ID 71042	✓
8	"	W.O. ID 69964	✓

ITEM ID	D3688-3	
ITEM ID	69971	AFT
ITEM ID	2006-667-207 BL	AFT
ITEM ID	2006-667-107 BL	FWD
ITEM ID	2006-667-203 BL	AFT
ITEM ID	2006-667-203 BL	AFT
ITEM ID	2006-667-103 BL	FWD
ITEM ID	2006-667-107 BL	FWD

NO RELEVANT INDICATION WAS DETECTED
AS PER APPLICABLE STANDARDS.

11-07-11

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair or use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

When performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE

TECHNICIAN (SIGNATURE):

NAME (PRINT):

John Titley

PRINT

[Signature]

SIGNATURE

JVES DESROSIERS

1ST TECHNICIAN

CGSB LEVEL

SNT LEVEL

CGSB REG. NO.

3049

CGSB LEVEL

SNT LEVEL

CGSB REG. NO.

DTR # E44696

REPORT

REVIEWED BY:

NAME

INITIALS

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

PT Sept 2005